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HEARING OFFICER'S REPORT

**DEPARTMENT OF FOOD AND AGRICULTURE
PROPOSED REGULATION 333 CMR 12.00 et seq.
PROTECTION OF PUBLIC DRINKING WATER SUPPLIES**

Presented To: Gregory C. Watson
Submitted By: Tara G. Zadeh
Dated: December, 1990

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911/108

MEMORANDUM

To: Gregory Watson, Commissioner
From: Tara Zadeh, Counsel to Regulatory Services
Dated: December, 1990
Subject: Hearing Report: Proposed Regulations 333 CMR 12.00
Protection of public water supplies

REPORT OF HEARING

I. PUBLIC NOTICE

Public hearings were conducted at the University of Massachusetts, Amherst on November 8, 1990; One Ashburton Place on November 9, 1990 and the Cranberry Experiment Station on November 13, 1990 in order to hear and receive testimony from interested parties concerning the proposed regulations.

The hearings were held in accordance with M.G.L. c. 132B sections 3 and 5 and in accordance with M.G.L. c. 30A. Notice of the hearing was provided by the following methods:

Published in:

- Springfield Union News on October 15, 1990. (Exhibit A)
- Boston Herald on October 15, 1990. (Exhibit B)

Filed with:

- Massachusetts Municipal Associations in accordance with Executive Order No. 145 on September 27, 1990. (Exhibit C)
- Executive Office of Communities and Development in accordance with Executive Order No. 145 on September 25, 1990. (Exhibit D)
- Secretary of State, Regulations Division on December 6, 1990. (Exhibit E)

Provided to:

- The Pesticide Bureau mailing list on or about October 5, 1990.
- Local Board's of Health on or about October 5, 1990.

Approximately 350 people attended the public hearings: 75 people presented oral testimony; 81 submitted written testimony.

For your consideration and assistance, I have provided a statement of the history of the proposed regulations, set forth a summary of the testimony by comment area, and provided an analysis of the comments and suggested regulatory changes.

(References in this report to "the Department", unless the context indicates otherwise, means the Department of Food and Agriculture.)

II. TEXT OF CURRENTLY PROPOSED REGULATION

333 CMR 12.00 Protection of Public Drinking Water Supplies

PREAMBLE

Groundwater is the source of drinking water for a large number of people in the Commonwealth through both public and private supply wells. There are two hundred seventy-five (275) communities in Massachusetts that rely, at least in part, on groundwater for potable water.

Due to the high cost and difficulty of monitoring, groundwater supply contamination can go undetected for a long period of time. Latent detection can pose a serious risk to public health and the environment. Once contamination is detected, the cost of clean-up is often extremely high or not feasible. In some cases, new drinking water sources must be established.

The extreme importance of maintaining the quality of public drinking water supplies necessitates a preventative approach be taken concerning pesticides that, based on toxicological characteristics, represent a serious health risk should they leach to public drinking water supplies. Based on the potential harm such an occurrence would cause, continued use of certain pesticides in proximity to public supply wells represents a potential threat of unreasonable adverse effects to the environment. These regulations are a preventative approach to protecting the environment and human health.

12.01 PURPOSE

The purpose of this section is to prevent contamination of public drinking water supply wells by pesticides determined to be potential groundwater contaminants.

12.02 DEFINITIONS The following words when used in this section shall have the following meanings:

(1) **INDOOR SETTING**- an application site which is not open to the soil or not vulnerable to weather conditions, including precipitation, and is located within a protected structure.

(2) **LEACHING POTENTIAL**- when a pesticide meets or exceeds the following criteria based upon data and information established in accordance with 40 CFR Part 158.290, and published in the US EPA Environmental Fate and Groundwater Branch Pesticide Fate One-line Summaries:

(a) water solubility greater than or equal to 3ppm; OR

- (b) K_{oc} less than or equal to 1900; OR
- (c) K_d less than or equal to 20 in the absence of a reported K_{oc} value; AND
- (d) soil half life greater than or equal to 7 days.

An absent or missing reported criterion will be considered as meeting or exceeding the criterion value.

(3) **POTENTIAL GROUNDWATER CONTAMINANT**- pesticides which are defined as being of "toxicological concern" AND possessing "leaching potential."

(4) **POTENTIAL VULNERABLE SITE**- when a site meets or exceeds the following criteria:

- (a) Soil Conservation Service Hydrologic Soil Group A soils, whose product of the top soil horizon, in inches, and the actual soil organic matter, in percent, is less than or equal to 15; AND
- (b) the depth to the aquifer is less than 15 feet; AND
- (c) (i) Depth to seasonal high water table is less than 2 feet; OR
(ii) Depth to fractured bedrock is less than 2 feet.

(5) **PRIMARY RECHARGE AREA**- land area determined to be a Zone 2 as defined in 310 CMR 24.06(2)(b) or in such cases in which a Zone 2 area has not been so determined, it shall in the interim be designated as a one-half mile radius from any public drinking water supply well, unless otherwise determined by The Department of Environmental Protection.

(6) **PUBLIC DRINKING WATER SUPPLY WELL**- a water supply well within a public water system which can draw over 100,000 gallons of water per day as defined in the Water Management Act and 310 CMR 22.02. Upon the petition of a public water supply system, the Department may include, under this regulation, a public water supply well of less than 100,000 gallons of water per day capacity, if the location of the well is accurately provided to the Department.

(7) **TOXICOLOGICAL CONCERN**- when a pesticide meets or exceeds any one of the following criteria:

- (a) Lifetime Maximum Contaminant Level (MCL), Proposed Maximum Contaminant Level (pMCL), Office of Research Standards (ORS) Guidelines, or Health Advisory Level (HAL) less than or equal to 20 ppb; OR
- (b) US EPA classification as a known or probable human

carcinogen, categories A, B1 or B2.

12.03 GENERAL PROVISIONS

1. No person shall use a POTENTIAL GROUNDWATER CONTAMINANT within a PRIMARY RECHARGE AREA unless that person is in possession of a valid VARIANCE issued by the Department pursuant to 333 CMR 12.04.
2. No person shall apply a POTENTIAL GROUNDWATER CONTAMINANT within a PRIMARY RECHARGE AREA inconsistent with the conditions of a VARIANCE.
3. All pesticides determined by the Department to be a POTENTIAL GROUNDWATER CONTAMINANT shall be placed on the GROUNDWATER PROTECTION LIST to be compiled and updated annually by the Department.
4. Pesticides which meet the definition of a POTENTIAL GROUNDWATER CONTAMINANT are exempt from restrictions under this regulation provided that these pesticides are labelled for, and used exclusively in, an INDOOR SETTING.

12.04 VARIANCE

1. The proponent of the VARIANCE shall supply, on a form or format provided by the Department, evidence, adequate to the Department, to justify the granting of a VARIANCE including, but not limited to, each of the following:
 - (a) Name of POTENTIAL GROUNDWATER CONTAMINANT proposed for use;
 - (b) All maps necessary to identify the anticipated use site in relation to the primary recharge area;
 - (c) Written evaluation of alternate control methods;
 - (d) Information including, but not limited to, each of the following:
 - (i) Target pest;
 - (ii) Method of application;
 - (iii) Rate of application;
 - (iv) Crop and cultivar;
 - (v) Documentation of implemented Integrated Pest Management;
 - (vi) Storage, handling, mixing, and loading procedures;
 - (e) Site specific data with appropriate references and

documentation on, but not limited to, each of the following:

- (i) Soil type;
- (ii) Top soil horizon depth;
- (iii) Percent slope;
- (iv) Soil Conservation Service Soils Hydrologic Group;
- (v) Soil test results including percent organic matter;
- (vi) Other data which may support a finding that the anticipated use site is not a POTENTIAL VULNERABLE SITE.

The Department reserves the right to request additional information from the proponent in consideration of any VARIANCE.

2. The Department will solicit comment from the Department of Environmental Protection and the Department of Public Health on any VARIANCE under consideration, and advise these Departments of the preliminary findings of the Department before rendering a decision.

3. Upon receipt of all information provided pursuant to 333 CMR 12.04 (2), the Department will render a decision within sixty (60) days. In the event a decision is not rendered within the specified time period the VARIANCE is not considered granted.

4. A VARIANCE to authorize the use of a POTENTIAL GROUNDWATER CONTAMINANT on a site in a PRIMARY RECHARGE AREA otherwise prohibited by section 12.03 may be issued by the Department if the Department determines that each of the following is met:

- (a) there are no alternate control methods to the use of the POTENTIAL GROUNDWATER CONTAMINANT; AND
- (b) the anticipated use site is not a POTENTIAL VULNERABLE SITE as defined in 333 CMR 12.02.

5. In the event that the Department issues a VARIANCE, the Department may impose conditions on the use of a POTENTIAL GROUNDWATER CONTAMINANT.

6. Notwithstanding the provisions of this section, the Department reserves the right to deny a VARIANCE in order to prevent a potential threat of unreasonable adverse effects on the environment.

7. The VARIANCE shall be valid for a period of one calendar year from the date of issuance.

12.05 RENEWAL AND AMENDMENTS

1. Any applicant desiring to amend or renew the VARIANCE shall submit an application, on a form or format provided by the Department, for review by the Department in accordance with the provisions of 333 CMR 12.04.

12.06 REVOCATION

1. The Department may revoke, suspend or modify an approved VARIANCE, by written notice to the proponent, if it finds:

- (i) that the conditions or restrictions of the VARIANCE thereof, are being violated or are inadequate to avoid significant risk of groundwater contamination or adverse human health concerns; OR
- (ii) that the applicant has made a false or misleading statement in any of the information provided pursuant to 333 CMR 12.04.

12.07 RECORD KEEPING REQUIREMENTS

1. Any person who uses a pesticide on the GROUNDWATER PROTECTION LIST, except those labelled for and used exclusively in an INDOOR SETTING, shall file annually with the Department, reports and records, consistent with the record-keeping requirements of 333 CMR 10.15, by the first day of January.

12.08 PENALTIES

1. Any person in violation of this section shall be subject to revocation of the VARIANCE or civil or criminal penalties pursuant to M.G.L. c. 132B section 13.

12.09 APPEAL

1. Any applicant aggrieved by a decision of the Department to deny, revoke, suspend or modify, a VARIANCE or aggrieved by the conditions of the VARIANCE, may request an adjudicatory hearing before the Pesticide Board as provided pursuant to M.G.L. c. 132B section 13. The request for a hearing must be made in writing and received by the Department within thirty (30) days of the date of the decision.

2. The decision of the Department shall remain in effect during the appeal period.

III. Introduction

The need to develop comprehensive regulations which protect our natural resource of water is self-evident. While the majority of aquifers that supply drinking water are continually recharged, some are of ancient origin and may be lost forever. In either instance, it is important that we protect our currently used water supplies as well as potential sources for the future. We are all aware that decontaminating a supply is extremely costly, both monetarily and environmentally.

The proposed regulation addresses the issue of non-point source contamination of groundwater aquifers by pesticides. Due to the significant toxicological concerns raised by the use of some pesticides, it is important that these materials do not reach the groundwater in detrimental amounts, contaminating our limited supply. However, due to their chemical composition, not all pesticides survive the journey through the elements and actually reach groundwater. Therefore, while the potential for risk exists, it is not always coupled with the exposure necessary to actuate the risk.

This regulation is a forward thinking effort to protect the environment and therefore humans, from pesticide contaminated groundwater, by regulating the use of certain pesticides with the ability to reach the groundwater under certain conditions. The regulation looks both to the potential risks of exposure and couples them with the realities of environmental conditions which reduce this risk. At the same time it acknowledges the need to consider the impact the regulations may have upon land use planning and the future viability of open space and agriculture in the Commonwealth of Massachusetts.

The Department should be commended for this progressiveness. There is no other regulation in the nation which attempts to address this issue in a preventative nature. Other states which have adopted "groundwater" regulations have been selective and contended with contaminations only after they occur. As you will see, many commentaries agree with this approach, state that the Department has, "pesticide paranoia" and that there is no contamination problem in Massachusetts.

Intelligent regulators should, however, not wait until problems arise, but should devise ways to minimize and hopefully eliminate the sources of existing and future contamination. In fact, the EPA, in a proposed rule regarding groundwater (40 CFR 41, 42, 43), requires that states adopt a groundwater protection program. Given the probability that the federal government will soon adopt this requirement, the Commonwealth will be one step ahead.

The "National Survey of Pesticides in Drinking Water", (USA EPA, Office of Water, Office of Pesticides and Toxic Substances, Fall 1990) (Resource Exhibit A), a five year joint project between the US EPA Office of Drinking Water and Office of Pesticide Programs, reported the initial results regarding the quality of the nation's groundwater. Initial results reveal that about 10.04% of the nations community water systems contain at least one pesticide above the survey's minimum reporting limits. With a confidence level of 95%, as many as 14.1% of the sources may contain pesticides over EPA's level of health concerns.

The "1985 Summary Report: Interagency Pesticide Monitoring Program", EOE (March 1986), (See Resource Exhibit B) reports that in a 1985 monitoring study 2,980 wells were tested for eight pesticides and detections were made in 543 wells: slightly over eighteen percent (18%). Three of the eight pesticides tested for during the study would be caught by the proposed regulations. Of these three pesticides highlighted in the study, 1199 wells were tested and detections were made in 215 instances: again, approximately eighteen percent (18%). These figures indicate that there may already be a significant contamination problem in Massachusetts, from both point and non-point sources.

It is true that pesticide contamination of groundwater is not the most common source of degradation. Human waste, industrial waste and petroleum products constitute some of the more serious areas of concern and, hopefully regulations will be drafted by the appropriate agencies to address these matters.

This regulation addresses one area of concern over which the Department has authority: pesticide contamination of groundwater sources of public drinking water supplies. There are many other areas which the Department should look to addressing in the future regarding protection of water from pesticide contamination. These include: surface runoff and point source (mixing, loading and storage) contamination. At this juncture in the history of pesticide use, this is a first and necessary step towards reassessing the costs and benefits of certain pesticides.

IV. Co-operative Effort

In order to make any regulation of this nature effective, persons with knowledge in a variety of areas need to combine their expertise. In this light, the Department worked closely with the Department of Environmental Protection, the Department of Public Health, the Cooperative Extension at the University of Massachusetts and USDA's Soil Conservation Service.

Below is a summary of each of these parties functions and responsibilities, the contributions they have made to the draft regulation, and suggestions for their future participation in this cooperative effort. Each of these organizations will be referred to throughout this report.

Department of Food and Agriculture:

The Department (DFA) was created by M.G.L. c. 128 and is charged with aiding in the promotion and development of agricultural resources. The Department, with the approval of the Pesticide Board is also authorized to adopt regulations for the implementation of the Massachusetts Pesticide Control Act, M.G.L. c. 132B, section 5.

This regulation is proposed in order to administer section 6 of the Act which requires that, "No person shall distribute, handle, ... any pesticide in a such a manner as to cause injury to humans... cause damage to the environment, or pollute or contaminate any water supply, waterway, groundwater or waterbody." The Department will act as the administering body and should be the agency which elicits the cooperation of others to assist in the implementation.

Department of Public Health:

This Department (DPH) was created by M.G.L. c. 111 and is charged with the responsibility of administering laws relative to public health while being cognizant of the "interests of life, health" and comfort. Additionally, the Department has responsibility for ordering towns to maintain a safe drinking water supply. For both reasons, DPH is very interested in preventing contamination of groundwater supplies from pesticide leaching.

As the primary guardians of public health in the Commonwealth, DFA requested that DPH contribute to the formulation of this regulation. Many of their suggestions have been incorporated into the proposed regulation and section 12.04 (2) requires DFA to solicit comments on proposed variances from DPH. DFA is encouraged to maintain close communication with DPH and continue to request advice from DPH about any adverse health effects which could arise due to the issuance of a variance.

Department of Environmental Protection:

This recently created Department (DEP) is referred to in M.G.L. c. 21A section 8 and charged with the general duty of protecting the environment. One division of DEP is responsible for the enhancement of the quality and value of water resources and establishment of programs for prevention of water pollution, M.G.L. c. 21 section 27. As such, DEP is staffed by persons with a

variety of expertise in these areas, is already administering programs for the prevention of water pollution and has a storehouse of pertinent information.

DEP collected, for administration of its own programs, much of the information which DFA will require in order to assess the proposed variance, and some of the information the applicant will need to submit to DFA for review. During the drafting of the regulations, DFA worked with DEP to establish the leaching criteria as well as the site vulnerability criteria used in the proposed regulation. DFA is encouraged to continue soliciting input from DEP and, section 12.04 (2) of the proposed regulation, requires that comments are solicited from that Department prior to variance approval.

DFA is encouraged to take advantage of the fact that DEP has information about delineated Zone 2 hydrogeology and well construction logs already on file. A real effort at cooperation must be made in order to provide a variance applicant the resources to easily obtain the requested information. DFA is encouraged to prepare a Memorandum of Cooperation with DEP, to assist DFA and the public in understanding what roles each of the department's will take in the process.

University of Massachusetts Cooperative Extension:

The Cooperative Extension assists Massachusetts agriculture (which includes traditional agriculture as well as landscape, turf, nursery, garden supplies, etc...), in maintaining an economically viable practice by providing current scientific information, evaluations and educational assistance. The staff are specifically concentrating on areas including Integrated Pest Management (IPM) and Water Quality. The Extension is funded by a combination of sources and provides IPM training to interested members of the agricultural community.

Cooperative Extension should be seen as an intricate part of the process which will make this regulation a success. The IPM Program takes an interdisciplinary approach to education and research, focusing on the use of pesticides in combination with biological controls and other management methods, to develop the most effective method of control with optimal protection of the groundwater.

USDA Soil and Conservation Service:

The Soil and Conservation Service (SCS) is an agency of the United States Department of Agriculture (USDA). The agency provides conservation planning assistance to all land users, and its staff are available to other government agencies for technical assistance.

In order to achieve the goals of conservation, SCS has conducted extensive surveys for mapping the entire state and already has information about soils data for much of the Commonwealth.

Currently, the staff of the local SCS are focussing their attention on water quality and have developed a program of education, cost sharing and technical assistance to address these issues. The field offices are now targeting on-site technical assistance as the primary method of assisting land users. It is recommended that the Department foster their relationship with SCS and capitalize on their expertise in the area of soil conservation. It is advised that the Department establish a formal cooperative agreement with SCS to ensure their continued involvement in implementing the groundwater regulation, and thereby limiting the applicant's cost of obtaining the information in the variance application.

V. BACKGROUND

The Department began formulating groundwater protection regulations over three years ago. In May of 1988, a draft of the proposed regulations was brought to public hearings (Resource Exhibit C). As a result of the hearings, the public comment, and the hearing officers report (Resource Exhibit D), the Department carefully reviewed the proposed scheme. Due to its desire to promulgate scientifically accurate regulations, which also takes into account economic and environmental impacts of the regulations, the Department worked closely with the DEP, DPH, SCS and Extension service to draft the currently proposed regulation and implementation strategy. This cooperative effort is reflected in the regulation's attempt to balance environmental, human health and economic factors.

There were a few sections of the regulation which were reevaluated, expanded or added in order to address the concerns raised at the previous hearings. Below are a list of these areas and a summary of the issues addressed by the changes.

DEFINITIONS

Toxicological Concern:

The definition of toxicological concern has not significantly changed from the original draft. The hearing officer's report suggested that additional health concerns be considered. Therefore, the Board established a task force comprised of members from DFA, DEP and DPH to review the definition. The group concluded that the original definition, while encompassing all of the EPA carcinogen categories of concern, failed to consider non-carcinogenic endpoints which are also of concern. These include pesticides with known neurotoxic, teratogenic, fetotoxic, and mutagenic effects.

As a result, the proposed regulation now screens pesticides not only for EPA carcinogen classes but also for exposure risks to other health concerns by considering Lifetime Maximum Contaminant Levels (MCL), proposed MCLs, Office of Research Standard Guidelines and Health Advisory Levels. All of these sources also review the non-carcinogistic effects of the pesticides, making the regulation more comprehensive.

Leaching Potential:

This definition also underwent refinements since the last draft of the regulation. Most of the comments presented at the previous public hearings and summarized in the hearing officer's report were incorporated into the regulation. Again, the Board formed a task force including DFA, DEP, and DPH, to evaluate the criteria.

In the original draft, the following criteria were used to assess leachability: water solubility, soil/water partitioning coefficient (Kd), Kd/organic matter (KOC), hydrolysis half life and soil half life. If any two of these criteria were met, the pesticide was deemed a potential leacher. The strongest comments in this area concerned the fact that this definition failed to account for the need to group the criteria for the characteristic they highlighted, either persistence or mobility, and then require that the pesticide meet at least one criteria in each character group.

Both mobility and persistence are necessary in order to indicate that the pesticide may reach the groundwater. The regulations failed to consider the interactive relationship of the criteria and the fact the it is the combination of factors which indicates leachability.

All of the original criteria were retained in the proposed regulation except for hydrolysis half life. I understand that this factor was not retained as it was not considered a good indicator of leachability by the task force. The criteria are now grouped according to persistence and mobility and the regulation requires that the pesticide meet or exceed one criteria from each group; satisfying the logical requirement that the pesticide be mobile and persistent.

The additional changes made relate to the trigger values within each criteria. The current numbers are more inclusive, and thereby broaden the effect of the regulation. The triggers were changed as follows:

	<u>Previous Proposal</u>	<u>Current Proposal</u>
water solubility	greater than or equal to 30ppm	3ppm
KOC	less than or equal to 400	1900
KD	less than or equal to 5	20
soil half life	greater than 3 weeks	1 week

Applied into Soil:

This discriminating factor was eliminated in the currently proposed regulation. It appears that instead of using method of application as an absolute screen, the method is now considered as one of many factors in the variance process. The proposed regulation presumes that every method provides the vehicle for leaching, and better indicators are the site characteristics. The method is then examined in light of the site's hydrogeologic characteristics.

Primary Recharge Area:

This definition was not changed from the previous draft.

General Provisions

The original "thou shalt not" provisions provided that "No person shall use, handle, mix, load or store within the primary recharge area...". The currently proposed draft intends to regulate only the application of the pesticides and therefore does not address point source issues. I understand that the Department contemplates enacting separate regulations for point source problems.

The addition which distinguishes the two drafts is the inclusion of a variance process in the current proposal. One of the areas of comment noted by the previous hearing officer was that the "regulations do not take into account soil variations", or

"incorporate factors such as soil, crop, water table...". Although the officer made no recommendation as to incorporating this aspect into the regulations, the Department determined that these were valid comments and that the site characteristics and use patterns may make it acceptable to use a potentially leachable pesticide on certain sites. Therefore, the variance scheme was created in conjunction with SCS and Extension, agencies which focus efforts on reducing impacts from land use.

Other:

The current proposal also adds definitions for "Potential Vulnerable Site" and "Public Drinking Water Supply Well" as well as a section providing record keeping requirements. The record keeping requirements were added in order to monitor the use of potential contaminants since a variance process had been added.

Due to the significant changes made and the addition of a variance section, the Department re-presented the proposed regulations, as amended, for public comment.

VI. TESTIMONY

Participation at the second public hearings was extensive; about three times as many people attended the hearings and twice as many people submitted written comments as during the public comment period in 1988.

The following is a list of names of the persons who submitted written comments. Attached as Resource Exhibit E are the sign in sheets from the hearings for those people who presented oral testimony.

Public Testimony: Written

<u>Testimony</u>	<u>Name</u>	<u>Affiliation</u>
A	Phyllis Gillespie	Green Industry Council
B	Michael Peplowski	Fermenta ASC
C	Eric Newell	Golf Course Superintendents Ass.
D	Arthur Rogers	Deerfield Land Trust
E	Kenneth Williams	Williams Farm, Inc.
F	Robert Helgeson	U. Mass. Food and Nat. Resource
G	Thomas Carter	Crop Production Services
H	James Williams	Mt. Toby Farm
I	Richard Bonanno	U. Mass. Extension
J	Mary Nourse	Nourse Farm
K	John Miczek	citzen
L	Agnes Williams	Mt. Toby Farm
M	William Handrich	Handrich Farm
N	Alex Dowse	Dowse Orchards
O	Mitchell Peele	Rhone-Poulenc Ag Company
P	Russell Jones	Rhone-Poulenc Ag Company
Q	Gordon Price	Mass. Farm Bureau
R	Richard Ficco, Jr.	Partners Quality Lawn Service
S	Mario Marini	Marini Farm
T	George S. Patton	Green Meadows Farm
U	Paul Harder	Essex Ag. and Tech. Institute
V	Donald Wilson	NE Vegetable Growers Ass.
W	Stephen Verrill	Verril Farm
X	Lawrence Cournoyer	Cournoyer Vegetable Farm
Y	Paul Tardiff	Tardiff Family Farm
Z	Paula Champagne	Harwich Board of Health
AA	Richard Ficco, Jr.	Partners Quality Lawn Service
BB	Gregory Melnik	Southern New England Farm Credit
CC	Robert Marquis	Swansea Water District
DD	Carlton Smith	C.N. Smith Farm
EE	Donna Jeffers	Cranberry Farm
FF	Allyn Lamb	Southern New England Farm Credit
GG	Keith Burrell	The Lawn Co., Inc.
HH	Richard Anderson	Dairy Farmer

II	Richard Erickson	Cranberry Grower
JJ	John Garretson	Cranberry Grower
KK	Richard Ward	Cranberry Farmer
LL	Thomas Gelsthorpe	Cranberry Grower
MM	Dick Kelly	Dick Kelly's Farm Stand
NN	Joel Rosenfeld	Southend Farm
OO	Michael Pepłowski	Fermenta ASC
PP	Charles Kaniecki	Southampton Board of Health
QQ	Jack Angley	Flax Pond Cranberry
RR	Raymond Noyes	Greenfield Farmer
SS	Frank Caruso	U. Mass. Cooperative Extension
TT	Don McMahon	The Lawn Co., Inc
UU	Jeffrey Case	Ciba-Geigy
VV	Linda Rinta	Plymouth County Conserv. Dist.
WW	Timothy Nourse	New England Veg. Growers Ass.
XX	---	Mass. Ass. of Health Boards
YY	Marvin Peck	Valley View Orchards, Inc.
ZZ	Henry Thibodeau	Lucas Tree Experts
A1	Philip Grovey	River Maple Farm, Inc.
A2	Jeffrey Kapel	Cape Cod Cranberry Growers Ass.
A3	Lynne MacDonald	citizen
A4	S. Walker and R. Sherman	citizens
A5	Ed MaGuire	The Lawn Company
A6	Earle Ricker	Cranberry Grower
A7	Lauri Martinelli	Mass. Audubon Society
A8	Katherine Stern	Dartmouth Board of Health member
A9	Prasanta Bhowmik	U. Mass/ Weed Science
A10	Robert Kane	Easton Board of Health
A11	Arthur Hart	National Ag. Chem. Ass.
A12	Gail Schumann	U. Mass. Amherst
A13	John Bragg	Mass. Farm Bureau
A14	Larry Cole	Cranberry Grower
A15	Nancy Ridley	Dept. of Public Health
A16	John Bolduc	Pesticide Board/Conservationist
A17	Fred Langley, Jr.	Dow-Elanco
A18	John Baker	U. Mass. Extension Director
A19	Herbert Marsh	U. Mass. Extension/vegetable
A20	Arleen O'Donnell	Dept. of Env. Protection
A21	John Williard	BASF Corporation
A22	John Peterson	Tom Irwin, Inc.
A23	Phyllis Gillespie	Green Industry Council
A24	John Baker	U. Mass Extension
A25	Paul Harder	Prescription Turf Services, Inc.
A26	William Rhodes	Cranberry Grower
A27	Philip Boucher	Tranquil Lake Nursery, Inc.
A28	Donna Dean	Middleborough Board of Selectmen
A29	James Walsh	Bristol Conservation District

VII. GENERAL COMMENTS

For organizational purposes, the areas of major comment have been listed, individually. The public provided the hearing officer with many comments, and allot of information, expending considerable time and effort to do so. I appreciated receiving these comments and seriously considered each one of them. It is, therefore, appropriate to address as many comments as possible and explain the manner in which they were incorporated into, or considered, in proposing the recommendations.

Many members of the public opposed the regulations as drafted. They contend that the regulation is too restrictive, arbitrary, and unnecessary, presenting the following specific comments:

1. Interim Zone 2: arbitrary
2. Leaching Potential Definition: restrictive and inaccurate
3. Petitioning by Smaller Wells: unfair and unpredictable
4. Monitoring First: actual effect vs. laboratory predictions
5. Variance Process: shifts burden to applicant, non expert
6. No Variance Time Limit: need definite time, unworkable
7. Site and Method of Application: should be considered initially
8. No Variance Option: unreasonable, unscientific
9. Vulnerable Site Definition: not accurate
10. Record Keeping: burdensome
11. Alternatives: none, lack of development assistance, harmful
12. No IPM Program Assistance
14. Toxicity: Includes HAL improperly

There were also comments commending the regulation, but suggesting that additional measures could be added, including:

1. Point Source Problems and Surface Waters Not Regulated
2. Rural Wells Not Protected
3. Some Products Should be Outright Prohibited
4. More Stringent Records Keeping

In addition to specific comments, many commentators presented general objections to the regulation related to its effect on the pesticide user groups. I would like to address these general areas of opposition separately. These include:

1. Awareness of User Community
2. Only "Potential" Harms
3. Land Use and Economic Impact
4. Ability to Obtain Financing
5. Burden Placed on User
6. "Taking" of Property

It should be remembered that the Department proposing these regulations is the Department of Food and Agriculture whose primary objective, pursuant to M.G.L. c. 128, is to encourage and support to growth of the agricultural industry in the Commonwealth. The Department is also charged, however, with the goal of regulating pesticide use within the state in order to protect health and the environment. Therefore, almost by definition, the Department is required to balance the seemingly competing interests of the pesticide using community with the objective of protecting the environment from those pesticides.

Awareness of User Community:

Many of the people who testified, stressed that their interests are not in conflict with resource protection, and in fact promote a cleaner environment. The implementation of these regulations is not meant to suggest that the user community is ignorant or unconcerned. In fact, the willingness to cooperate and assist the Department with implementation of these regulations proves otherwise.

The Department is aware that a significant majority of the pesticide user community is trained in proper methods of use and is knowledgeable about the potential harms that pesticides create. During the past ten years, the educational requirements of applicators increased and the Department notices less violations each year. Additionally, users are increasingly aware that integrated pest management (IPM) in combination with best management practices (BMPs) is not only safer for the environment, but controls the pest population more efficiently and is less costly. The proposed regulation urges the user to investigate all alternatives, and undertake sound practices, employing BMP techniques.

In all instances where the existing practice is effected by the regulation, the applicator will be required to consider the potential impact of the practice on groundwater supplies. Since the application of certain pesticides will no longer be blanketly allowed, as the regulation is proposed, the permitting process prompts the user to evaluate and consider other alternatives. If the alternatives are not readily apparent, or are less effective, the permitting process will educate the user about the particular pesticide's characteristics as well as the soil characteristics of the application area and the potential effect on groundwater supplies. The regulation acknowledges the awareness of the user community, and is the very reason that the goal of groundwater protection will be achieved.

(Representative comments were Testimony exhibits J and HH)

Only "Potential" Harms:

The fact that these targeted pesticides are continually referred to as "potentials" demonstrates that the Department is fulfilling its mandate to protect the public's health and the environment from harm. It is difficult to argue that a preventative approach is not the most protective. In fact, if a preventative approach had been taken years ago, the Commonwealth and the country would not currently be in this tenuous position. As noted earlier, eighteen percent (18%) of our supplies may already be contaminated.

A significant number of comments focussed on the fact that many of the listed pesticides have not been found in groundwater in Massachusetts or, for that matter, anywhere. These commentaries suggest that the state regulate only those pesticides which have actually been found in groundwater. One commentator suggested that only those pesticides detected at levels above the HALs be regulated. There are several problems with this approach.

First, previous monitoring efforts have not been extensive, and have not been conducted with this regulation in mind. The 1985 Summary Report (previously cited) was very limited in scope. The study targeted only eight pesticides in a limited geographic area. Most of the samples were taken from private well sources and were limited due to the amount of funding available for the project. Still, the eight pesticides tested for were located in the groundwater in eighteen percent of the samples. Additionally, the pesticides on the list which were not tested for in Massachusetts, were found in the National Pesticide Survey or by other states in their own monitoring programs (Washington, Florida, California, Minnesota). Additional comments contend that these studies may not be relied upon to discern non-point source or point source detections. For this very reason, it is important to consider the possibility that each of these contaminations may have been from non-point source.

Second, although analytical laboratories are more sophisticated now than in the past, there is not a high level of confidence that all chemicals will be detected. Studies may be flawed and the placement of the monitoring wells may be inadequate to note a detection.

Third, the preventative approach is pro-active and not prophylactic. Once monitoring locates a detection, the supply may be contaminated or at least degraded. The purpose of the regulation is to ensure the integrity of the supply and to prevent degradation. Even if a particular pesticide has not been detected, we should all be concerned about the environmental loading effects of pesticide use. The application environment is not a static entity and, through time, may alter and degrade, causing previously trapped pesticides to flow through.

Most importantly, the Department worked together with the Task Force to select criteria and triggers which indicate pesticides with high leaching potentials. Once the Department is comfortable with the chosen criteria and triggers, the level of confidence will be high that these criteria actually predict leachers and do not regulate products currently of less concern. This is the goal of the science of environmental fate: to accurately predict leachability.

Given the confines of a controlled laboratory experiment, the pesticides "captured" by the list are actual, not potential, leachers. The potentiality arises due to the varying environments, methods, application rates, and soil types relating to individual applications. Each pesticide on the Groundwater List only has the "potential" to reach the groundwater under certain circumstances. The regulations attempt to discern these circumstances and prevent the potentials from becoming a reality.

(Representative comments in these areas include Testimony exhibits B, J, M, O, EE, UU: N, O, X, DD, A13, A17)

Land Use and Economic Impacts:

Numerous comments were received regarding the future demise of agriculture and open space land in Massachusetts if these regulations are implemented. Out of anger and frustration, people claimed that they would be "put out of business" by this regulation, and that each new regulation results in farmers abandoning Massachusetts. The Department's objective is to support, not "cripple", agriculture by ensuring the integrity of our resources through reasonable regulations.

In fact, the reported number of farmers in Massachusetts had grown in the last past decade. Unfortunately, some forty dairy farmers have gone out of business during the past few years due to factors other than regulations including: fluctuating milk prices, small profit margin and their inability to compete with larger operations.

It should be clear to the public that the Department does not intended to regulate the farming community out of existence. Again, we must all remember that regulating authorities are constantly balancing interests which, on the surface, seem competing. The Department is concerned with the possibility that viable farm land may be lost to developers if farmers are unfairly or over-regulated.

After a careful review of the numerous comments, the report submitted by University of Amherst entitled: Economic Impact of Proposed Zone 2 Pesticide Ban In Massachusetts: Preliminary Estimates For Corn, Cranberries and Tomatoes, (undated), and information submitted to the hearing officer by the Department related to the cost of applying for a variance and amount of land impacted by the regulation, it does not appear that the regulation will detrimentally effect any of the user groups to such an extent as to force them out of business.

DFA and DEP calculated that 6.5% percent of the land (420,676 acres) in Massachusetts is situated in the current Zone II areas. Of this land, 3.39% percent (14,248) is currently used for agriculture. Therefore, the actual percentage of agricultural land covered by the regulations is minimal, and for non-agricultural land is less than two (2) percent.

The Cooperative Extension at the University of Massachusetts, submitted testimony indicating that there are available alternatives for a majority of the pesticides (see above Impact Study). In the event that an alternative is not available and the farming of products such as sweet corn and tomatoes are effected, these farmers can apply for a variance.

If the Department denies a variance, after careful consideration of all presented information about the site, intended application methods and practices, it will have determined that the potential for the pesticide to leach into the groundwater is high. It that event, there will be an economic impact on the user which is unavoidable. At that point, a decision is made that public health and the environment would be jeopardized by allowing the use, and those interests outweigh the individual user's interest. No one, including the concerned user, would desire to continue the application once that determination is made.

(Representative comments in these areas include Testimony exhibits: G, H, I, J, M, O, Y, EE, HH, II, JJ, LL, AB)

Ability to Obtain Financing:

The Department received testimony from the Southern New England Farm Credit, ACA, indicating that the unpredictability of the variance procedure could lead to less financing being granted. While there may be some uncertainty in the initial years as to the effect of the regulations on each agricultural operation, the following years will not be unpredictable as the information provided in the variance process will be constant from year to year, and more alternatives will be developed.

(Representative comments in this area include Testimony exhibits FF and BB)

Burden Placed on User:

Probably the greatest area of verbal and written comments centered on the burden placed on the user community by these regulations. Essentially, as the regulations are proposed, the burden of locating alternative methods and/or applying for a variance and locating the information necessary to complete the application is placed on the user. It has been suggested that this process is overly burdensome, and therefore prohibitory.

If the process is understood, and certain steps taken to look for assistance where it is available, the process should be manageable and welcomed. The regulations encourage the use of Best Management Practices and Integrated Pest Management, and the Department should make every effort to promote research of IPM techniques, educate the users, and work with the various industries to develop alternatives.

The Department should be committed to seeking funding for programs which will assist the users. It would be shortsighted to develop regulations which potentially eliminate a current tool without assisting in creating another. The Department is strongly urged to continue the yearly dedication of funds and staff for the promotion and development of IPM and BMP's, and locate additional sources of funding.

For those persons who do not have the choice of alternative methods at this time, they are provided with the opportunity to apply for a variance. The cost of the variance process will be discussed in a later section. The cost of obtaining the information for the variance is not prohibitive and, in fact, will be minimal if at all. In this regard, the Department is hoping for the cooperation of SCS and Extension, in assisting the applicant.

Both SCS and Extension are willing to provide, as possible, the technical staff to work with the applicants. It is extremely important that the Department solicit the commitment of these agencies and cement the relationship by formalizing the

contributing nature of each party. A Memorandum of Cooperation and Understanding (MOU) should be prepared and signed by all three groups, acknowledging the role each must take or is willing to take in the variance process.

In this light, again, the Department should manifest its commitment by dedicating funds to this process. I recommend that the Department work with these other parties to establish if assistance is needed and, perhaps, dedicate funds to hire a staff person to work exclusively with SCS and Extension, if necessary.

Additionally, the Department should look towards establishing an MOU with DEP, to ensure that information regarding subsurface and geologic materials are available to the applicant or the Department. Making these resources available to the applicant will defray the cost of the variance process.

(Representative Comments in this area include exhibits O, KK, LL, QQ, BB, EE, JJ, A13, A17)

Taking:

I want to briefly address the issue raised at the Boston public hearing that this regulation is a government "taking" of property. This type of contention has been well settled by case law and, although the concepts sometimes seem difficult to accept, are practical.

In order for state governments to pursue their constitutional obligation to care for their citizens, regulations often restrict the conduct of landowners, ie: zoning restrictions and nuisance laws. If there is a complete "taking", where the landowner is completely deprived of the use of his property, then the government must compensate the owner for his losses. If any activity can take place on the property, however, it is not a complete "taking" but a warranted restriction.

Chief Justice Holmes illuminated this concept in Pennsylvania Coal v. Mahon, 260 U.S. 393, 413-416 (1922), "Government could hardly go on if to some extent values incident to property could not be diminished without paying for every such change in the general law. ... The general rule at least is, that while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking."

Although this regulation may require that certain pesticide practices are altered, use of the property for its current purpose is not prohibited.

VIII. SPECIFIC COMMENTS

The following discussion reviews the regulation by individual sections, examining the public's comments, providing a discussion of the comments and the hearing officers recommendations.

Current Proposal:

TITLE: Protection of Public Drinking Water Supply Wells

Comments:

One commentator suggested that the title be exactly tailored to the intent of the regulation, specifying that the intention is to protection groundwater sources of public drinking water supplies.

Discussion:

The title should be as directed as possible. Hopefully the Department will be looking towards additional regulations protecting surface supplies of drinking water from non-point source pollution, and both sources from point source pollution. This regulation, admittedly, only intends to regulate groundwater supplies from non-point source pollution.

Recommendation:

The title should be changed to the following:

" Protection of Groundwater Sources of Public Drinking Water Supplies From Non-point Source Contamination"

(Representative Comments in this area include Testimony Exhibit A20)

PREAMBLE

There were neither significant changes, nor comments on this section.

12.01

Current Proposal:

PURPOSE

The purpose of this section is to prevent contamination of public drinking water supply wells by pesticides which are determined to be potential groundwater contaminants.

Comments:

One commentator indicated that the purpose should be consistent with the title and refer to the regulation's focus.

Discussion:

The Purpose should be consistent with the title and should state that the regulation protects groundwater sources of public drinking water supplies.

Recommendation:

It is recommended that the purpose be changed to the following:

"The purpose of this section is to prevent the contamination of groundwater sources of public drinking water supplies from non-point source contamination by pesticides determined to be potential groundwater contaminants."

(Representative Comment in this area were Testimony Exhibit A20)

12.02

DEFINITIONS

Current Proposal:

(1) *INDOOR SETTING*- an application site which is not open to the soil or not vulnerable to weather conditions, including precipitation, and is located within a protected structure.

Comments:

The only comment received regarding this definition suggested that the words, "including a greenhouse" be added at the end of the sentence.

Discussion:

The definition as proposed includes many types of structures which prevent applications of pesticides from having the opportunity to leach through to the ground. Any application within a structure which meets the definition would be exempt from the regulation. The description already includes greenhouses so constructed.

Recommendation:

The definition should not be changed.

(Representative comments in this area include Testimony Exhibit A13)

Current Proposal:

(2) **LEACHING POTENTIAL**- when a pesticide meets or exceeds the following criteria based upon data and information established in accordance with 40 CFR Part 158.290, and published in the US EPA Environmental Fate and Groundwater Branch Pesticide Fate One-line Summaries:

- (a) water solubility greater than or equal to 3ppm; OR
- (b) K_{oc} less than or equal to 1900; OR
- (c) K_d less than or equal to 20 in the absence of a reported K_{oc} value; AND
- (d) soil half life greater than or equal to 7 days.

An absent or missing reported criterion will be considered as meeting or exceeding the criterion value.

Comments:

A. Triggers and Criteria

A significant number of comments focussed on both the criteria and the triggers proposed in this definition. As addressed earlier, the trigger values changed significantly from the originally proposed regulation, are more conservative and therefore encompass more active ingredients. The current grouping of the criteria, by mobility and persistence, was generally commended. However, those who agreed with using this method of prediction opposed the selected triggers.

In February of 1989, the Department published a report entitled, "Protection of Groundwater from Pesticides, A Strategy for the Commonwealth." (Resource Exhibit F) The Department adopted the same strategy for evaluating the leaching potential of pesticides as put forth by the EPA (based on Stuart Z. Cohen's, PhD. scheme). Prior to preparing the Strategy, the Department reviewed other methods, and expressed some concern over adopting a computer modeling system as absolute indicators, but stated that the models could be utilized as part of a screening process to assist in identification of leachers.

Therefore, less than two years ago, the Department proposed to adopt EPA's criteria and triggers to evaluate pesticide leaching potential. The pesticide user community accepts this federal scheme as reasonable. They recommend a return to these triggers and state that the currently proposed triggers are "entirely arbitrary", "overly conservative", and "too restrictive". These commentators suggest striking the current triggers and replacing them with EPA's. No other triggers were suggested.

One industry organization suggested that the criteria should only be used as an initial screen and then the listed pesticides should each be evaluated individually. One other person suggested that more of the criteria proposed by the EPA be evaluated.

B. Scheme

There were, however, almost as many comments which opposed the EPA scheme and triggers as well as the triggers currently proposed by the Department. They contend that this process fails, not only to utilize more recent technological advances in the science of environmental fate prediction, but also fails to consider the complex interaction between mobility and persistence criteria in assessing environmental fate.

Comments aimed at these concerns suggested the use of an environmental fate model based on the Groundwater Ubiquity Score (GUS) index algorithm. Various University and industry experts endorsed the use of the GUS index, noting its general acceptance and current use by SCS in their water quality program.

C. Data Base and Data Gaps

Other aspects of the definition which received negative comment were the use of the EPA One Liner Summaries as the data base, as well as the presumption of meeting the criteria if a data gap exists in the One Liners; stating that the presumption is arbitrary. The Cooperative Extension and SCS suggest the use of another database, one produced by the USDA.

Other comments in this vain suggested that the scheme should be replaced by a monitoring effort, only those pesticides detected should be regulated, and that the registrant should be allowed to provide any missing data.

D. Title of Definition

The suggestion was made to return the title of the definition to "Significant" Leaching Potential as used in the previous draft. In the current proposal, the term "Significant" was deleted.

Discussion:

A. Triggers and Criteria

In developing the leaching definition, the Task Force selected criteria and triggers based upon review of schemes adopted or suggested by the US EPA, the University of California Department of Food and Agriculture (CDFA), and the University of Massachusetts Cooperative Extension. The criteria were selected for their predictability and are based on the EPA model discussed in DFA's Strategy. Since the drafting of the Strategy, however, the

Department reviewed the trigger values with the members of the task force. They were re-scrutinized in light of DFA's charge to protect the environment from contamination.

The Task Force adopted the water solubility (greater than 3ppm) and Koc (less than 1900) triggers established by the CDFA (Johnson, Setting Specific Numerical Values, Environmental Hazards Assessment Program, October 1989). The Kd value of less than 20 is consistent with the Koc selected, as the former is derived from a formula based on the latter. The Department contends that the soil half-life trigger of greater than 7 days is consistent with the other triggers in that it is proportionately conservative, but did not provide any resource or further explanation. Comments neither specifically supported the use of the triggers, nor explained why those triggers were selected.

The Department reported that the California triggers were formulated as a result of a monitoring program conducted in that state. The CDFA examined the characteristics of those pesticides which were actually detected in the groundwater and then selected triggers which would classify those pesticides as leachers. The criteria may be changed as more information is obtained. Therefore, CDFA triggers are specific to California goals and are not necessarily good general indicators of leachability.

Adoption of the triggers used by CDFA's may be problematic, but not irrational. Those triggers were based on actual detections in another state. If there is confidence in using detection as an indication of leachability, then the adopted triggers are good indicators. However, the detections may be directly related to application routines, of the soil types in the application areas. The EPA acknowledges this concept in 40 CFR Parts 141, 142, and 143, National Primary and Secondary Drinking Water Regulations; Proposed Rule at Appendix B, "Guidance to Determining Vulnerability of Public Water Systems to Contamination by Pesticides" at page 22140, "The identification of contamination by pesticides ... during previous monitoring efforts suggests that the recharge area is vulnerable." (Resource Exhibit G) The detections are not necessarily a reflection of the pesticide characteristic, but the site. Therefore, before adopting criteria based on detections in another state, reflecting their goals, the research should be highly scrutinized.

B. Scheme

In an effort to completely understand various comments and information submitted concerning the leaching potential definition, a paper entitled "The Groundwater Ubiquity Score: A Simple Method for Assessing Pesticide Leachability." (Gustafson, 1989) (hereafter referred to as the "GUS Index") (Resource Exhibit H), was reviewed. Dr. Gustafson is the Director of the USDA Water Quality Initiative and, is recognized by the scientific community, including

environmental chemist Dr. Seiber of University of California, Davis, and Dr. Hornsby of Florida State University, (with whom I have spoken), as an expert in this field.

The GUS Index bases its evaluation on the most discriminatory indicators of leachability. Most importantly, the formula reflects the relationship between mobility and persistence criteria and then rates pesticides as possessing large, medium, or small leaching potential. The advantage to using this algorithm rests in its more refined ability to screen true leachers. Although the Gus Index was the only method suggested as an alternative to the current proposal, there may be other formulas which the Department could consider.

After evaluating the different approaches of the methods, it seems that a process which evaluates the interactive relationship of the criteria would lead to better predictability. It is the combination of characteristics in relation to each other which determines the nature of a chemical.

C. Data Base and Data Gaps

The Task Force selected the EPA One Liner Data Base as the source of data in order to remain consistent with the use of the EPA leaching criteria scheme. EPA's original intent in producing the One Liners was to have information readily available for the public: only the most commonly requested information is produced.

Although DFA received One Liners for 630 active ingredients, I have been informed by the Department that environmental fate data is missing for a significant number of chemicals. Therefore, the list of chemicals presented as the only products meeting the current criteria is incomplete. Only certain products were run through the scheme. I requested that DFA provide me with a complete list of the chemicals which meet the definition of Potential Groundwater Contaminant, but have not yet been provided with the list. Numerous products will be placed on the List due to the presumption.

With regard to the comments about striking the provision which includes pesticides if a data gap exists, I concur that the inclusion of this provision is overly inclusive and creates a list of pesticides which would be difficult at best, and unnecessary to regulate.

To date, the only other nationally computerized data base is the USDA database. This provides a more complete listing of the properties of pesticides. The USDA National Pesticides Properties Database was developed by USDA agencies in conjunction with the agricultural chemical and university scientific communities nationwide, and is used by the USDA in their water quality programs

The data base currently consists of chemical and physical properties for approximately 250 pesticides. The pesticides chosen were selected in an effort to cover pesticides with the highest number of users and those which were sold in the greatest volume throughout the country. The USDA is constantly updating the database and expects that an updated, more comprehensive data base will be published in the very near future.

The other reason this data base is a useful reference relates to the type of information available. In addition to providing references and details on the soil type and other conditions in relation to the values provided, the dual data base provides a "selected value" section. There is a problem with the regulation's selection of one trigger number when a range of values are usually reported in the EPA One Liners. This section of USDA's database provides actual values in a manner which places each pesticides on commensurate level. While ranges can be retrieved, a certain value is selected.

If EPA's One Liner's are used in any manner, the regulation needs to specify if the lowest number in the range will "capture" the pesticide, if the highest number will be used, or an average. The reported Kd and Koc values change in relation to the soil conditions. Selecting the highest, lowest or average value will be imprecise, however, and perhaps the most conservative selection should be made. As this is only a screening process, the Department could reconsider these factors in the variance process and re-evaluate the products leaching potential on the particular sites soil type. Again, this is what many programs can already accomplish, ie: NPURG.

D. Title of Definition

Whether or not to add the word, "Significant" should be considered by the Department. The only flag this raises is the question, if these are significant, are the others insignificant?

Recommendation:

A. Triggers and criteria

In the event that the proposed scheme is retained, the trigger numbers should be re-evaluated or further substantiated.

B. Scheme

It is recommended that the Department reassess the selection of the leaching definition and consider applying the GUS index or other rating systems which analyze the relationship of the characteristics. Neither this Department, nor the other members of

the Task Force are experts in the field of soil analysis. Thus, the recommendations of those who are knowledgeable and experience in this area should be given considerable weight. As the GUS index has been adopted by SCS and is recommended by the Director of U.Mass. Extension who specializes in soil science, this alternative should be evaluated.

C. Database and Data gaps

The Department should confront the issue of missing data and develop an alternative plan. Applying a presumption is more restrictive than necessary and does not reflect a balancing of interests.

I understand that the Department is developing a monitoring program and suggest that information obtained from the program be analyzed. The Department should consider adding another provision to this definition which, in the absence of One Liner information, allows for the inclusion of pesticides as possessing leaching potential if they are detected in groundwater in Massachusetts in x percent of monitoring wells and reviewed and determined by DFA to be from non-point sources. As the program has not even begun, this information may not be available for several years.

This addition would allow the regulation to restrict the use of pesticides which have demonstrated leaching potential as well as those which have been predicted through modelling to have leaching potential. Again, the foreseeable problem with this approach is that the detection of a pesticide may not be a reflection of the pesticides properties, but of the soil type in the application area.

Another suggestion to contend with the data gap issues would be to replace or combine EPA's One Liners with another database. In order to be thorough and protective, it is recommended that the Department consider using both the EPA and USDA data bases. There are two suggestions for combining the review of the data:

1. The EPA database could be screened first and, if there are data gaps, the USDA database could be screened.

2. The databases could be reviewed simultaneously and the more conservative figure applied. In the event of a data gap in one resource, the information in the other database should be used.

In either event, it is recommended that the regulation specify if it will look to the highest or lowest value if a range is reported in the EPA One Liners.

(Representative Comments in this area include Testimony Exhibits: B, F, I, P, TT, VV, A2, A3, A9, A11, A13, A15, A17, A18, A19, A20, A21, A22)

Current Proposal:

(3) **POTENTIAL GROUNDWATER CONTAMINANT**- pesticides which are defined as being of "toxicological concern" AND possessing "leaching potential."

Comments:

A. Soil Incorporated and/or Detections as Screen

There were a few comments regarding this definition. Although this comment was raised in other sections, one association suggested that an initial discriminating factor should be added. They recommend that not only should the toxicological and leaching criteria be met, but the pesticide should only be classified as a "Potential Groundwater Contaminant" if the product is applied into soil, or has been detected in groundwater from normal applications in conditions similar to those found in Massachusetts.

Many people commented that the method of application should be used as an absolute screen, and that all applications except for soil applied should be excluded from the regulation. Several comments referred to studies conducted at Pennsylvania State University and other universities as well as the recent study conducted by the EPA of golf course on Cape Cod which indicate that turf provides a buffer strip before the soil and prevents run-off and leaching.

B. Use of Computer Technology

Other comments suggested that chemical characteristics alone do not accurately predict contamination, and that this information should be reviewed in conjunction with the site characteristics through the use of computer technology.

Discussion:

A. Soil Incorporated and/or Detections as Screen

The use of "method of application" as a screen suggested in the first draft of the regulation was removed in the current proposal. As discussed earlier, the use of method as an absolute screen was reevaluated by the Department. Method, application rate, target pest, crop and other information are not reviewed in the initial screening, but will be evaluated in the variance process.

It does not seem reasonable to exclude certain methods of application from regulation when it is admitted that the characteristics of the applications site are a large contributing factor to leachability. No one can contend that all soils, turfs, or bogs are the same. Many man-created upland bogs are poorly

constructed and I have spoken with golf course owners who admit that their turf layers are thin and tenuously grown on top of sandy soils.

One type of application, however, has been a stumbling block in my review. Although I have not received any specific information regarding applications to ornamental trees, DFA should review the potential of these pesticides to reach the ground. Applications to leaves of trees, not drenching, are in a different class than turf applications or soil applied pesticides and, logically, may so greatly reduce the possibility of reaching the ground and groundwater that there is no need to regulate their use.

The Department is not ignoring the significance of these factors and will evaluate them in the variance process. "Potential Groundwater Contaminant"s are just that - potentials. Under certain conditions, with some use patterns and on some soil types, etc., their potential will not be exacted. Likewise, as discussed earlier, using previous detection as a screen is not protective.

B. Use of Computer Technology

This suggestion combines some of the information requested in the variance process with the information reviewed to determine "leaching potential". The process currently proposed requires the technical staff of the Department as well as DEP and DPH to review the information. There are a variety of computer programs with data bases containing information regarding chemical characteristics, soil and well log information as well as weather variables. All of these variables play a part in effecting the pesticides potential to leach. I understand that the DRASTIC model, promoted by the EPA is available but very expensive. Other models such as GLEAMS and NPURG can be obtained for little or no cost.

In the current scheme, all of these factors are considered. The Department, however, may want to examine each of the computer models and determine if they can be used in combination with, or in lieu of, manually reviewed information. This process could free some of the staff's time to more carefully review the alternative available and the management practices proposed in each variance application. The process of the regulation is the same as the computer modeling systems, reviewing characteristics of the pesticide as well as site hydrogeology and method factors.

Perhaps, because the computer systems are able to be more objective and constant in their determinations, they should be strongly considered by the Department for use in determining if a variance is recommended. This process, however, should only be employed after certain pesticides are targeted due to the initial screening for leaching and toxicologic criteria.

Recommendation:

It is recommend that the definition remain the same, and that the Department review the use of computer technology to assist in the variance process. It is also recommended that the risk from certain application methods to ornamental trees be reviewed and that these methods be excluded from the regulation if there is a rational basis for the exemption.

(Representative comments in this area include Testimony Exhibits A, GG, HH, UU, A2, A7, A13, A16, A18)

Current Proposal:

(4) **POTENTIAL VULNERABLE SITE**- when a site meets or exceeds the following criteria:

- (a) Soil Conservation Service Hydrologic Soil Group A soils, whose product of the top soil horizon, in inches, and the actual soil organic matter, in percent, is less than or equal to 15; AND
- (b) the depth to the aquifer is less than 15 feet; AND
- (c) (i) Depth to seasonal high water table is less than 2 feet; OR
- (ii) Depth to fractured bedrock is less than 2 feet.

Comments:

The suggested changes to this definition were specific and unvaried. Specific areas to be addressed are as follows:

A. Depth to Fractured Bedrock and Seasonal High Water Table

Of the few comments regarding this definition, there was a recommendation to change the screening depth of the seasonal high water table and the depth to fractured bedrock from two (2) feet to four (4) feet. The reason presented was that certain areas should absolutely be barred from obtaining a variance where the site conditions are known high leaching areas.

B. Inclusion of Group B Soils; Top Soil Horizon and Organic Matter Product

These same commentators also requested that soils in SCS Hydrologic Soil Group B be included in the description of a potentially vulnerable site, and that the product of the top soil horizon and the percent organic matter be increased to thirty (30) percent.

C. Existence of a Confining Layer

In this area, the suggestion was made that the existence, or lack, of a confining layer be considered in addition to the depth to the aquifer.

Discussion:

A. Depth to Fractured Bedrock and Seasonal High Water Table

The depth of four (4) feet recommended by both of the other agencies as well as other environmental groups is unopposed by the user groups. The change suggested is proposed to reflect a reasonable margin of safety and, is adopted from the Title V septic regulations, 310 CMR 15.00 et seq., (Resource Exhibit I). This depth to the seasonal high water table was adopted by DEP as a reasonably safe protection buffer from potential septic leaching.

As Title V was drafted to insure protection of groundwater from septic leaking, it is reasonable to apply the same protective barrier in this instance (although an exact equation can not be made between pesticides and septic). Comments also indicate that these depths are often inaccurate and fail to provide a margin of error which in these borderline areas is very important. Therefore, to err on the side of safety is recommended.

B. Inclusion of Group B Soils; Top Soil Horizon and Organic Matter Product

The submitted testimony did not provide any definition of Group B Soils, nor any technical reason why this Group should be included. The inclusion of these soils would, however, broaden the areas of automatic exclusion.

Since persons with land in areas defined as potentially vulnerable sites are excluded from obtaining a variance under any conditions, the definition should only exclude those areas which the Department is confident are extremely vulnerable areas. While any site only provides the medium for leaching, these sites should be defined as areas where there is little question that the pesticides on the groundwater list would leach. The remainder of the land area in the state are potentially vulnerable areas. The lands excluded by this definition should be the most vulnerable in the state, as they are targeted for irrebuttable exclusion.

Again, with regard to the exclusion of additional soils if the product of the top soil horizon and the organic matter is less than thirty (30) percent, may be over inclusive. This definition only intends to screen those highly vulnerable sites.

C. Existence of a Confining Layer

In considering whether or not the groundwater below a particular site is susceptible to leaching depends greatly on the existence of a confining layer between the soils and the aquifer. But it also depends greatly on the depth to the aquifer. Including the existence or lack of a confining layer greatly broadens the field of included areas. Although a site may be conducive to leaching, the depth to the aquifer should also be considered. If the aquifer is forty (40) feet below, the chances for leaching are greatly reduced.

It seems logical, therefore, that if the depth to the seasonal high water table is less than four (4) feet but, the depth to the aquifer is greater than fifteen feet, this land area should not be considered a highly vulnerable area. Proponents of the change would be including areas which have deep aquifers without confining layers, a very inclusive definition. Again, these areas should only include those with high vulnerability, and not those which deserve to be examined individually.

Recommendations:

It is recommended that the depth to fractured bedrock and the seasonal high water table be changed from two (2) to four (4) feet; that the soils of SCS Hydrologic Group B are not included; and that the lack of a confining layer not override the depth to the aquifer. Further, it is recommended that the title of the definition be changed to "Highly Vulnerable Sites" in order to highlight the distinction. All sites are potentially vulnerable.

It is recommended that the definition be changed to the following:

" Highly Vulnerable Site - when a site meets or exceeds the following criteria:

- (a) Soil Conservation Service Hydrologic Soil Group A soils, whose products of the top soil horizon, in inches, and the soil organic matter, in percent, is less than or equal to fifteen (15); and
- (b) the depth to the aquifer is less than 15 feet; and
- (c) the depth to the fractured bedrock or seasonal high water table is less than four (4) feet."

(Representative comments in this area include Testimony Exhibits B, G, P, A2, A7, A13, A15, and A20)

Current Proposal:

(5) **PRIMARY RECHARGE AREA**- land area determined to be a Zone 2 as defined in 310 CMR 24.06(2)(b) or in such cases in which a Zone 2 area has not been so determined, it shall in the interim be designated as a one-half mile radius from any public drinking water supply well, unless otherwise determined by The Department of Environmental Protection.

Comments:

A. One Half Mile Radius

Not unlike the previous hearings regarding this regulation, numerous objections were made to the inclusion of interim Zone II areas of a one half (1/2) mile radius. These commentators assert that the distance is "arbitrary," "unprotective" and "inaccurate". These protests lead the commentators to conclude that only those areas with actually delineated Zone IIs should be included in the regulation.

The commentators state that an actual Zone II may encompass an area of one mile to twenty miles and, therefore, the interim zone does not actually protect the recharge area. One person noted that even DEP, in a letter to public water suppliers dated February 8, 1989, categorized the interim zones as, "not an accurate definition".

The comments also refer to the fact that approximately 70% of the public water supply wells do not have delineated Zone IIs. Other organizations noted that the regulation should focus on delineated Zone IIs in order to focus resources and assistance in the known areas of contribution. Another suggestion was made to recommend, but not mandate, conservation plans and the use of BMP's in interim areas.

Most of the comments against the use of the interim Zone II propose that the zones should be delineated by DFA, DEP or the municipality prior to inclusion in the regulation.

B. DEP Determination of Interim Area

A few people commented on the fact that, as the regulation reads, the interim Zone II is, "a one-half mile radius..., unless otherwise determined by the Department of Environmental Protection." The question was raised as to whether or not DEP, "can expand, on its own whim, the radius around a well to 2 miles, 6 miles, etc.?" There was a strong opposition to the way in which this definition is phrased.

C. Citation to DEP Regulation

Two comments noted that the citation to DEP's regulations was outdated and that 310 CMR 24.09(2)(b) should be changed to 310 CMR 22.02.

Discussion:

A. One Half Mile Radius

This interim standard is adopted from DEP's regulation and is identical to the area used by DEP in lieu of a designated Zone II. There have, however, been significant changes since the previous draft of this regulation in DEP's designation of the interim Zone.

In 1988, the use of the interim standard as a substitution when no actual Zone II had been determined was suggested in a DEP (then DEQE) policy. The standard had not been adopted through a hearing process with public notice and comment. However, the use of the interim Zone II is now incorporated into DEP's regulations. DFA's intended use of the 1/2 mile radius is similar to DEP's in its application as a regulatory tool to scrutinize the conduct of certain activities in delineated areas of concern.

The Zone II definition is set forth in 310 CMR 22.02,

"Zone II means that area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days pumping at safe yield, with no recharge from precipitation). It is bounded by the groundwater divides which result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone II shall extend up gradient to its point of intersection with prevailing hydrogeologic boundaries (a groundwater flow divide a contract with till or bedrock, or recharge boundary)."

The interim Zone II is set forth in 310 CMR 22.21(1)(i),

"If the Department has not approved the Zone II for a public water supply well or wellfield in use..., the Department will apply an interim area of special protection for such wells and wellfields as they relate to Department programs. This interim area of special protection shall be a one-half mile radius measured from the well or wellfield."

As a regulatory tool, it is rational to apply DEP's interim definition and remain consistent with other state departments. Neither agency claims that the interim standard is completely protective but, DEP determined that it is the best interim standard to adopt. In fact, in the February 1989 letter referred to in the comments, DEP strongly urges "all public water suppliers to submit completed but unapproved Zone II delineations .. for approval...". In the interim, DFA's adoption is not arbitrary, but consistent with a standard established by the state's lead agency for water protection after a public hearing process.

In more economically prosperous times, it might be useful to require that actual Zone IIs are delineated before their inclusion as protected areas in this regulation. The exclusion might serve to urge municipalities to fund a study to delineate actual zones. Suppliers which chose to protect their water supplies would then be included.

In these time, excluding those undelineated areas would not prompt the municipality to conduct a study. The funding is plainly not available. The result can be imagined: wealthy towns could protect their population whereas poorer towns could not. This is not the intention of this regulation. The interim standard allows for the best protection under the circumstances. Municipalities are still encouraged, however, to conduct a delineating study in order to protect the actual recharge area.

B. DEP Determination of Interim Area

As this definition is currently written, DEP could notify DFA of its intention to change the interim Zone II - for the purpose of this regulation- to one mile or sixty miles. This was clearly not DFA's intention. In the event that DEP changes the interim definition, DFA can amend this regulations to be consistent. If DEP's reference to interim zones was defined in a definition, and the same terminology which DFA was using, DFA could simply make a reference to DEP's regulation and adopt that definition. DFA, however, refers to measurement of 1/2 mile from a "public drinking water supply well" and DEP from a "well or wellfield".

C. Citation to DEP Regulation

As noted earlier, DEP adopted new regulations since the previous draft. The numbering has changed and the citation should reflect the current cite.

Recommendation:

After reviewing DEP's regulations, and discussing their actual effect with the DEP staff, it became apparent that DFA's regulation does not include protection of Zone I areas. The oversight was probably a result of misunderstanding the fact that a Zone I is not a subset of a Zone II. Therefore, by regulating use in Zone II areas only, the land area directly around the well head (usually a 400 foot buffer) is not regulated. It is recommended that DFA included Zone I areas in the regulation.

It is recommended that the definition of Primary Recharge Area be changed to the following:

"Primary Recharge Area - land area determined to be a Zone I or Zone II as defined in 310 CMR 22.02 or, in such cases where a Zone II area has not been approved by the Department of Environmental Protection, it shall be designated as the interim area of special protection of a one-half mile radius from any public drinking water supply well. "

(Representative comments in this area include Testimony Exhibits F, I, Q, N, EE, UU, WW, A2, A7, A13, A19, A20, A22)

Current Proposal:

(6) PUBLIC DRINKING WATER SUPPLY WELL- a water supply well within a public water system which can draw over 100,000 gallons of water per day as defined in the Water Management Act and 310 CMR 22.02. Upon the petition of a public water supply system, the Department may include, under this regulation, a public water supply well of less than 100,000 gallons of water per day capacity, if the location of the well is accurately provided to the Department.

Comments:

A. "Can Draw"

The commentaries on this section protested the looseness of the definition, referring to the fact that it includes wells which "can draw", and will include those wells which are not active or supply very limited people.

B. Smaller Wells

There was also opposition to including those public wells which have the capacity to draw less than 100,000 gallons of water per day upon petition; the fear being that the entire state will eventually be included. Other comments suggested that wells which service over 25 people should be included without having to petition in order to protect those in rural areas.

Discussion:

A. "Can Draw"

Much of the confusion about the ramifications of the definition result from a misunderstanding as to which wells are included, and the reason for selecting this capacity. As noted earlier, DEP interim Zone II areas are a "one half mile radius from the well or wellfield" of any public water supply. While the Department may have wanted to include all such supplies, the information to do so is not currently available.

DEP stated that, at the present time, they have a well maintained data base of public water supplies designed to pump 100,000 gallons of water per day. The reason being that, according to DEP regulations 310 CMR 22.00 et seq., these new and altered wells must apply to DEP for approval before they are placed on line. Also, the supplier must submit information to DEP regarding the Zone II and III, a monitoring program, zoning controls and other data. Systems approved by DEP pursuant to 310 CMR 22.21 (1) (c) or (d) for construction, expansion, replacement and placement on-line, must demonstrate the ability to pump over 100,000 gallons of water per day. Those which are unable to do so, are approved according to 310 CMR 22.21 1(b). (Resource Exhibit J)

Systems which are designed to draw over 100,000 gallons per day can service approximately 1,000 people. The data base of these areas contains 167 wells, with 81 delineated Zone II's Commonwealth.

Additionally, the reference to 310. CMR 22.02 is misleading. "Public Water System" is defined in DEP's regulation as a system which serves an average of twenty five (25) people at least sixty (60) days of the year. DFA then added its own condition that the supply have the ability to draw over 100,000 gallons of water per day. In order to clarify which wells are actually included, a direct reference to DEP's regulations should be made and its language adopted. (Resource Exhibit K)

DEP's regulations (310 CMR 36.00 et seq.) also require the registration of existing water sources which draw over a "threshold volume" (over 100,000 gallons for any period of three consecutive months, for a total withdrawal of not less than nine million gallons or an average daily volume of 100,000 gallons for a period of three consecutive months). This registration comprised the bulk of the data base by requiring existing sources to register by 1988, and is complemented by the new source approval requirements of 310 CMR 22.00 et seq.

B. Smaller Wells

The intention of the regulation is to protect groundwater supplies of public drinking water sources from non-point source contamination. Areas should not be excluded because they supply a smaller population. In fact, these supplies probably service the rural community and are located in areas with high incidents of pesticide application. Unfortunately, DEP does not require that these suppliers determine their Zone II before they are placed on line.

It is unreasonable to exclude these areas from regulation. However, it is not unreasonable to require, at the present time, that those which are included have Zone II areas designated and approved by DEP before they are included in the regulation. When DEP proposed the interim Zone II area, they based this prediction upon examining the flow of leached toxic materials. The gallons per day the well is designed to draw, however, may directly effect the Zone II area. Additionally, if the Zone II is actually designated, the town will be able to assist in providing information to the user and informing them if they are within the regulated area.

This is not to suggest that an interim Zone II in these areas does not assist in protecting these areas and certainly not to imply that the Department should opt to protect only wealthy areas. At this time, the Department has limited staff and is only beginning to develop the implementation strategy for this regulation. The Department is urged, however, to reevaluate this section after the program is operating and include these smaller wells as currently proposed (by petition), when resources allow.

Recommendation:

It is recommended that the definition refer to those wells actually approved to be constructed, expanded, replaced or on-line by DEP pursuant to 310 CMR 22.21 (c) (d) and (e) and those pre-existing sources registered with DEP pursuant to 310 CMR 36.04.

It is also recommended that smaller wells be included once a Zone II area has been designated.

Therefore, it is recommended that the definition be changed to the following:

"Public Drinking Water Supply Well - a public water supply well or wellfield determined by the Department of Environmental Protection to meet the requirements of 310 CMR 22.21 (c), (d) or (e); or is registered with the Department of Environmental Protection pursuant to 310 CMR 36.04; or a public water supply wellfield designed to pump less than 100,00 gallons of water per

day and has been determined by the Department of Environmental Protection to meet the requirements of 310 CMR 22.21 (a) and has delineated a Zone II, approved by the Department of Environmental Protection.

(Representative comments in this area include Testimony Exhibits N, DD, EE, UU, WW, A2, A7, and A 13)

Current Proposal:

(7) **TOXICOLOGICAL CONCERN**- when a pesticide meets or exceeds any one of the following criteria:

- (a) Lifetime Maximum Contaminant Level (MCL), Proposed Maximum Contaminant Level (pMCL), Office of Research Standards (ORS) Guidelines, or Health Advisory Level (HAL) less than or equal to 20ppb; OR
- (b) US EPA classification as a known or probable human carcinogen, categories A, B1 or B2.

Comments:

A. No Variance Option

An equal number of comments opposed the idea of including a category of pesticides as prohibited as commended it. Those in opposition contended that creation of an arbitrary line is "irrational", "disregards science and technology", and is based on "blind fears". Those in favor of the prohibition refer to certain pesticides as "bad actors" and would like to see them prohibited from use throughout the Commonwealth based on the toxicological criteria alone.

B. Deletion of ORS Guidelines

A few comments suggested that ORS guidelines be removed from consideration, contending that they are not accepted guidelines anywhere but in Massachusetts.

C. Label Warnings and EPA Special Review List

Other commentators suggested that those products which contain labels with groundwater warnings be included on the list as well as those on EPA's Special Review List.

D. Other

Another commentator noted that Metalochlor met the definition of toxicological concern in the proposed list due to an ORS guideline of eight (8). The commentator noted that ORS has just changed its guideline to the same as the HAL and MCL guidelines of 100. Therefore, under the proposed scheme, Metalochlor would not meet the definition of toxicological concern.

Discussion:

A. No Variance Option

Throughout the regulation, stress is placed on the fact that a crucial factor in determining exposure to a pesticide is its potential to reach the medium of exposure - in this case - the groundwater supply. A pesticide is not a risk if no opportunity for exposure exists. Therefore, it is not logical, through this regulation, to ban the use of a pesticide in Zone II's due to its toxicological concern only. There must be a potential to leach and site hydrogeologic conditions conducive to leaching.

This is not to say, however, that there are not pesticides which the Pesticide Board considers highly dangerous. If the focus of concern of these pesticides is their toxicological concern only, it is suggested that an appropriate vehicle for banning the product in certain areas (or throughout the state), would be to conduct a Special Review of the material. The Subcommittee could then determine if the product should be banned in the entire state or limited to use in certain areas. In these instances, the Subcommittee could consider route of exposure and appropriately restrict the individual product.

These products could become state Restricted Use or State Limited Use for groundwater concerns. Through this type of review, the registrant would be afforded the required due process and full consideration of the products qualities can be made.

B. Deletion of ORS Guidelines

It is well known that a state may adopt standards which are more stringent than federal standards in order to protect its own population from harm. The fact that ORS guidelines are not adopted elsewhere indicates that they are guidelines the Commonwealth has adopted for the protection of its citizens.

The ORS guidelines are consistent with EPA's standards for calculating risk for carcinogens. When examining non-carcinogistic end points ORS reviews all routes of exposure, not just through drinking water. By including this criteria in the definition, the Department may be excluding pesticides which have low guideline levels established due to concerns of exposure through inhalation

or dermal contact for example. ODW guidelines, on the other hand, are set based upon exposure through drinking water consumption only.

On the currently proposed list of Groundwater Contaminants, only one pesticide falls into this definition by the established ORS guidelines. The Department is encouraged to re-examine the use of this criteria.

C. Label Warnings and EPA Special Review List

At the current time, there is some confusion as to whether or not products are placed on EPA's Special Review List for groundwater contamination reasons. Attached as Resource Exhibit L, are the definitions and a partial copy of the products under Special Review by the EPA. The list notes the 40 CFR 154.7 Criteria which is possibly met or exceeded, the reason for the review. As noted, Aldicarb has been placed on the List for Acute Toxicity and Ground Water Contamination review. There are five criteria which can place a chemical on the Special Review List, the fifth of which is, " Any other adverse effect to humans or the environment which may outweigh the benefits that justify initial or continued registration." Under this criteria, pesticides can be tagged for review as potential groundwater contaminants.

It is recommended that this issue be investigated by the Department and, if it is determined that the EPA is now placing products on the Special Review List due to concerns of Ground Water Contamination and Health concerns, these products could be considered as meeting the definition of toxicological concern.

Likewise, it is recommended that the Department investigate which products have label warnings for groundwater contamination, the reason the labels were required, and if they should be placed on the Groundwater List due to this factor.

D. Other

It is recommended that the Department obtain monthly updates from DEP as to the ODW and ORS guidelines. If the ORS guideline for Metolachlor has been updated, the Department should make note of this information.

Recommendation:

It is recommended that no category of prohibited pesticides be included in the regulation. It is also recommended that the Department investigate the inclusion of chemicals on EPA's Special Review List and labeling requirements for groundwater reasons.

With the exception of incorporating any changes based on these investigations, no change is recommended.

(Representative Comments in this area include Testimony Exhibit I, JJ, A2, A13, A15, A16, and A23)

IX. ADDITIONAL DEFINITIONS

Comments:

A. Unclear Meaning

It was astutely noted that there are a few words which require definitions in order to fully understand the intent of the regulation. Words are used in this section of 333 CMR with meanings different than those in other sections.

Specifically, there is no definition of Groundwater Protection List and what criteria are used for placement on the List, or for the term, "use".

B. Unnecessary Inclusion

There are also comments which point out that products have been included by definition which the Department does not intend to regulate: ie Black Flag.

Discussion:

A. Unclear Meaning

The definition section must define the word, "use". Proposed 333 CMR 12.03 (1) states that, "No person shall use...". As noted earlier, this regulation does not intend to regulate the mixing, loading or storage, disposal or transportation of pesticides. Although the original proposal included these aspects, that is not the current intention. As previously discussed, the Department is strongly urged to incorporate the other "uses" into this regulation or develop another regulation as soon as possible. It is not logical to allow a pesticide to be mixed in an area, but not applied.

In order to distinguish the current intent from that of 333 CMR 10.00 et seq. where "Use of a Pesticide" is defined to include any act of handling a pesticide, a definition must be added. To make it absolutely clear, it is recommended that the Department consider substituting the word, "apply" for "use" in 12.03 (1).

As for the term Groundwater Protection List, I believe the intent was to place those chemicals which meet the definition of a Potential Groundwater Contaminant on the List. The List should be defined as containing the brand or trade name of the products and not just the active ingredient.

B. Unnecessary Inclusion

It appears to be true that the current definition of a Potential Groundwater Contaminant does not consider the fact that many of the active ingredients which meet the definition of a Potential Groundwater Contaminant are contained in products used by homeowners and some pose no risk due to the homeowners use patterns or the percent of the active ingredient contained in the product.

Just as there has been an exemption for indoor applications, there should also be an exemption for these products. Unless there is a change in the registration status of the products, it will be impossible for the Department to enforce this regulation against homeowners. If these certain products were labeled for restricted use, homeowners would not be able to purchase them.

There are several approaches which could be taken to remedy this oversight. Below are some suggestions to assist the Department.

1. The Department could define the "Groundwater Protection List" as those pesticides which meet the definition of a Potential Groundwater Contaminant and have been screened by the Department for groundwater concerns based on Department policy. The Department would then place specific product names on the List and not just active ingredients. This alternative leaves much to DFA's discretion.

2. The Department could exempt homeowner uses and define "Personal and Homeowner Use" to include applications for personal home use and not to include commercial non-agricultural or agricultural application. The specific types of applications should be listed.

3. The Department could exempt those products which contain below a certain percent of the active ingredient and are for Personal Homeowner Use.

Also, as previously noted, it is recommended that DFA review the leaching potential possibilities associated with applications to ornamentals. In the event that DFA decides to exclude this method from the regulations, it should be defined and excluded from the list of products placed on the Groundwater Protection List.

Recommendation:

It is recommended that definitions of "Apply" (use), and "Groundwater Protection List" and "Personal and Homeowner Use" be added. As noted, there are many approaches which can be taken. One suggestion follows:

"Apply - the act of applying a pesticide in accordance with label directions."

"Groundwater Protection List - lists the trade name of those individual products, currently registered for use in the Commonwealth, whose active ingredients meet the definition of Potential Groundwater Contaminant, and are not for Personal or Homeowner Use (or ornamental applications)."

"Personal or Homeowner Use - includes those applications for personal or home use, made by the homeowner or the person in legal possession of the premises and does not include commercial applications or agricultural applications."

"Applications to Ornamentals".....

(Representative Comments in this area include Testimony Exhibit UU and A16)

12.03

X. GENERAL PROVISIONS:

Current Proposal:

12.03 GENERAL PROVISIONS

1. No person shall use a POTENTIAL GROUNDWATER CONTAMINANT within a PRIMARY RECHARGE AREA unless that person is in possession of a valid VARIANCE issued by the Department pursuant to 333 CMR 12.04.
2. No person shall apply a POTENTIAL GROUNDWATER CONTAMINANT within a PRIMARY RECHARGE AREA inconsistent with the conditions of a VARIANCE.
3. All pesticides determined by the Department to be a POTENTIAL GROUNDWATER CONTAMINANT shall be placed on the GROUNDWATER PROTECTION LIST to be compiled and updated annually by the Department.
4. Pesticides which meet the definition of a POTENTIAL GROUNDWATER CONTAMINANT are exempt from restrictions under this regulation provided that these pesticides are labelled for, and used exclusively in, an INDOOR SETTING.

Comment:

This area received very little comment. There were, however, some questions regarding the Groundwater Protection List and the effect of receipt of new information or yearly updating.

Discussion:

In order for the regulation to be workable, the public must be able to identify the products being regulated. The List should be published by a specific date each year and only those products on the list at that time should be regulated for that year.

Recommendation:

It is recommended that the implications of the products placement on the List be clarified and the regulation changed to the following:

12.03

(3) The Department will produce and update a Groundwater Protection List on a yearly basis, as of January 1 of each year.

It is also recommended that the numbering be changed to conform to the system required by the Secretary of State's Office. The numbers one through four (1-4) should be in parenthesis.

12.04

Current Proposal:

12.04 VARIANCE

1. The proponent of the VARIANCE shall supply, on a form or format provided by the Department, evidence, adequate to the Department, to justify the granting of a VARIANCE including, but not limited to, each of the following:

- (a) Name of POTENTIAL GROUNDWATER CONTAMINANT proposed for use;
- (b) All maps necessary to identify the anticipated use site in relation to the primary recharge area;
- (c) Written evaluation of alternate control methods;
- (d) Information including, but not limited to, each of the following:
 - (i) Target pest;
 - (ii) Method of application;
 - (iii) Rate of application;
 - (iv) Crop and cultivar;
 - (v) Documentation of implemented Integrated Pest Management;
 - (vi) Storage, handling, mixing, and loading procedures;

(e) Site specific data with appropriate references and documentation on, but not limited to, each of the following:

- (i) Soil type;
- (ii) Top soil horizon depth;
- (iii) Percent slope;
- (iv) Soil Conservation Service Soils Hydrologic Group;
- (v) Soil test results including percent organic matter;
- (vi) Other data which may support a finding that the anticipated use site is not a POTENTIAL VULNERABLE SITE.

The Department reserves the right to request additional information from the proponent in consideration of any VARIANCE.

2. The Department will solicit comment from the Department of Environmental Protection and the Department of Public Health on any VARIANCE under consideration, and advise these Departments of the preliminary findings of the Department before rendering a decision.

3. Upon receipt of all information provided pursuant to 333 CMR 12.04 (2), the Department will render a decision within sixty (60) days. In the event a decision is not rendered within the specified time period the VARIANCE is not considered granted.

4. A VARIANCE to authorize the use of a POTENTIAL GROUNDWATER CONTAMINANT on a site in a PRIMARY RECHARGE AREA otherwise prohibited by section 12.03 may be issued by the Department if the Department determines that each of the following is met:

- (a) there are no alternate control methods to the use of the POTENTIAL GROUNDWATER CONTAMINANT; AND
- (b) the anticipated use site is not a POTENTIAL VULNERABLE SITE as defined in 333 CMR 12.02.

5. In the event that the Department issues a VARIANCE, the Department may impose conditions on the use of a POTENTIAL GROUNDWATER CONTAMINANT.

6. Notwithstanding the provisions of this section, the Department reserves the right to deny a VARIANCE in order to prevent a potential threat of unreasonable adverse effects on the environment.

7. The VARIANCE shall be valid for a period of one calendar year from the date of issuance.

Comments:

This was the most widely commented section in a variety of areas. Other areas of comment impact on this section and should be reviewed in conjunction therewith. Specifically, the comments regarding the use of computer modeling systems should be reviewed.

A. Process:

General comments regarded the additional burden this process places on the applicant as one more regulatory process consuming their time. The application process is viewed as cumbersome and complicated. The suggestion is that the process be removed, that every user be granted a variance without providing technical information and that the public water supply monitor for detections.

The members of the green industry and the pest control organizations noted that the process would be impossible for their sectors as the area of application changes with each client on a monthly or daily basis. Not only would the applications be impossible to obtain in a timely manner, but the cost would be prohibitive.

B. Cost:

A major obstacle to acceptance of the regulation is the cost which commentators perceive must be expended in applying for the variance. Oral comments estimated figures nearing \$20,000 for some farmers. They indicate that the need to hire experts will render applying for a variance impossible.

C. Transfer of Burden:

Many people contended that it is unfair to place the burden of the process on the user, as if the land area was determined guilty and the applicant has to prove the innocence. The contention is that the Department should demonstrate the vulnerability of each area, and that the inexpert applicant should not have to obtain the technical information.

The comments also criticize the Department for its suggestion that the applicant contact SCS and the Extension for advise and information. With their already over taxed resource, it is said that they will not be able to provide the necessary assistance. One suggestion was to require "Management Plans" in these areas instead of the variance process.

D. Alternatives:

Two points are raised concerning alternatives. The first is that allowable alternatives may pose greater risks than the potential contaminant. The second is that the alternative may not be as effective or be a part of their IPM program. Additionally, several members of the Extension commented that alternatives are not available for many products on certain crops.

The suggestions recommend that those products which do not have economically feasible alternatives, are not regulated and variances be automatically granted.

E. Time Limit:

Many comments noted that a time limit for reviewing the variance must be placed on the Department. Leaving an open ended process was not acceptable as it provides no opportunity for planning the coming year.

F. Other:

Other comments requested the inclusion of a definite time for referral of the application for a variance to the other participating agencies, and discussed the validity period of the variance. It was contended that a variance should be valid until the information in the variance changes and not yearly.

Discussion:

A. Process:

The Department has acknowledged that method of application is an important factor in determining leaching potential. It is, however, not a determinative factor.

For non-soil applied methods, such as foliar and turf applications, the Department will take into consideration the reduced potential produced by the methods in evaluating the variance application. In these cases, the adoption of an Integrated Pest Management program may often be an acceptable solution. No method should be exempt from the process. The basis of the regulation rests in analyzing the site characteristics.

It is unfortunate that the regulation may impact certain industries due to the nature of the process. This regulation, however, intends to protect certain groundwater supplies of drinking water. To ignore potential harms in order to promote one industry is not advisable. Regulations should not be drafted to ensure that every person can obtain a variance.

B. Cost:

The accessibility of a variance process depends greatly on the cost of the application. If the cost is prohibitive, the regulation will not be able to function as the Department intends. According to information provided by DFA, the information requested in the regulation can be obtained by the applicant in two ways: 1) by personally searching available sources for existing information and contacting SCS and Extension, or 2) by hiring a private consulting firm.

Extension and SCS have never charged a fee for their services, and have informed the Department that the information requested in the application can be obtained for the cost of the laboratory fee, ten dollars (\$10.00). DFA is working with both sources to make information available on a data base.

As for independent sources, DFA contacted five private consulting companies and obtained estimates ranging from \$1,500 - \$10,000 for a one acre area of land. The disparity probably results from the lack of knowledge as to where this information can be obtained from. Additionally, the Department has not yet decided exactly what type of information will be required and how extensive the testing should be, ie. three samples per acre, estimates for a field, etc.

Since SCS and Extension have agreed to cooperate with DFA and assist people in obtaining the information necessary for a variance application there is a low cost avenue for applying. In the event that a landowner opts to hire a consultant, the one time cost of assessing their land may be prohibitive depending on their resources, acreage and profit margins. This will depend, on a large extent, on the information DFA requires.

C. Transfer of Burden:

The Department should take all steps possible in order to assist the users in applying for a variance. Although the Department has not yet established a concrete plan for administration of the variance process, it has been working closely with the other cooperating agencies to locate the necessary information and develop an application which requires only the information absolutely necessary for the basis of an evaluation.

Both SCS and the Extension service have been integral members in the development of this regulation. They have expressed a commitment to assisting the applicants with obtaining the requested information. The goals of the regulation promote, and assist in the attainment of pre-established goals of these organizations.

D. Alternatives:

Once again, we must return our thoughts to the purpose of the regulation. The intent is to prevent contamination of groundwater supplies from non-point source pollution. Economic feasibility may play some role in the decision process but should not be a determining factor. Economics can not always take precedence over the environment. The non-existence of economically practical alternatives should be only one piece of information requested in the application. But, given the current list of pesticides, and knowing that certain pesticides do not have economically feasible alternatives, altering the variance process to automatically grant variances if there are no economically feasible alternatives would be farcical.

For those products with no economically feasible alternatives at the present time, the Department should consider a phase in period and the dedication of resources to develop alternatives or acceptable IPM programs. In any case, it is incumbent upon DFA to promote research for alternative control methods. If economically viable alternatives are available, the applicant should not be issued a variance.

Another question raised is, how does one document the implementation of an IPM program and which programs are acceptable. It is recommended that the Department enlist the assistance of the Extension Service and user groups to develop IPM programs for their members. The documentation would be a signed copy of the program adopted by the user.

E. Time Limit:

It is important that this process not interfere with the advanced planning many applicators now require for implementation of IMP programs. DFA confirmed that sixty (60) days will be sufficient for review of the applications. In the event that the Department is unable to render a decision within sixty (60) days or denies the variance, it should be required to notify the applicant within ten (10) days of the reason for denial, or the delay as a result of the need for additional information. If this notice is sent, a determination should be required to be made within thirty (30) days of receipt of the additional information.

F. Other:

A definite time frame for notification of DEP and DPH should be incorporated into subsection 2. The Department should be required to advise the other departments of the submission of an application within fifteen (15) days of receipt. Additionally, although the applicant must be required to renew the variance yearly, it is not reasonable to require that a completely new application with the same information be submitted each year.

As noted in earlier discussions, DFA should take note of any monitoring data available and should review this in the variance process.

Recommendation:

It is recommended that the variance section be changed to the following, with re-numbering. Subsections (2)(3)(4) were changed and the request for monitoring information added to the variance:

12.04 VARIANCE

(1) Application

(a) The proponent of the Variance shall supply, on a form or format provided by the Department, evidence adequate to the Department to justify the granting of a Variance, including but not limited to each of the following:

- 1. Name of Potential Groundwater Contaminant proposed for use;**
- 2. All maps necessary to identify the anticipated use site in relation to the Primary Recharge Area;**
- 3. Written evaluations of alternative control methods, including economic ramifications;**
- 4. Information regarding target pest, method of application, rate of application, crop and cultivar, storage, handling, mixing and loading procedures;**
- 5. An affidavit stating the adoption of an Integrated Pest Management Plan, and the contents of the Plan.**
- 6. Site specific data, of each of the following:**

- (i) Soil type**
- (ii) Top soil horizon depth**
- (iv) Percent slope**
- (v) Soil Conservation Service Soils Hydrologic Group**
- (vi) Soil test results including percent organic matter**
- (vii) Any available monitoring data**
- (vii) Other data which supports a finding that the anticipated use site is not a Highly Vulnerable Site.**

(b) All information submitted in the application must reference the source of the data. The Department reserves

the right to request additional information from the applicant at any time throughout the review process.

(2) Inter-departmental Review

- (a) The Department will inform the Department of Environmental Protection and the Department of Public Health within fifteen (15) days of receipt of an application and shall make the application available for their review.
- (b) Any comments submitted by the Department of Environmental Protection and the Department of Public Health regarding an application will be reviewed by the Department, and the Department will advise the other agencies of the preliminary findings before rendering a decision.

(3) Disposition of Application

A variance to authorize the use of a Potential Groundwater Contaminant on a site in a Primary Recharge Area otherwise prohibited by section 12.03, may be issued by the Department only if it finds that each of the following exist:

- (a) the anticipated use site is not a Highly Vulnerable Site,
- (b) the issuance of the variance is not likely to cause an unreasonable adverse effect on the environment.
- (c) there are no economically viable alternative control methods to the use of the Potential Groundwater Contaminant.

(4) Notification

- (a) Within sixty (60) days of receipt of a completed application, the Department will render a written decision notifying the applicant that the variance application has been:
 1. Approved,
 2. Denied, or
 3. Held, pending additional information.
- (b) In the event that the Department is unable to render a decision pending further information, the Department will inform the applicant of the specific information needed to complete its evaluation at the time of notification.

- (c) Within thirty (30) days of receipt of the additional information, the Department will render a decision in accordance with 12.04 (4)(a).
- (e) In the event that the Department issues a Variance, the Department may impose conditions on the use of the Potential Groundwater Contaminant.

(5) The Variance shall be valid for a period of one calendar year from the date of issuance and may be renewed pursuant to section 12.05.

(Representative comments in this area include Testimony Exhibits A, G, I, L, N, O, W, BB, EE, JJ, KK, LL, PP, QQ, UU, A2, A13, and A17)

Current Proposal:

12.05 RENEWAL AND AMENDMENTS

1. Any applicant desiring to amend or renew the VARIANCE shall submit an application, on a form or format provided by the Department, for review by the Department in accordance with the provisions of 333 CMR 12.04.

Comments:

The suggestion was made to require that a variance be valid for the lifetime of the holder unless there was a change in the information.

Discussion:

In order for the Department to be confident in the variance process, it should require that the variance be renewed each year. In this way, the application can be reviewed in light of new information gathered over the year, and the use records submitted pursuant to the regulation. It is recommended that the application should provide for the signing of a statement that the information submitted in the previous years application has not changed.

Recommendation:

It is recommended that no change be made to this section except for placement of the number in a parenthesis, (5).

(Representative comments in this area include Testimony Exhibits A7 and A13).

Current Proposal:

12.06 REVOCATION

1. The Department may revoke, suspend or modify an approved VARIANCE, by written notice to the proponent, if it finds:

- (i) that the conditions or restrictions of the VARIANCE thereof, are being violated or are inadequate to avoid significant risk of groundwater contamination or adverse human health concerns; OR
- (ii) that the applicant has made a false or misleading statement in any of the information provided pursuant to 333 CMR 12.04.

No public comments were received in this area however, it is recommended that the numbering be changed to conform to the Secretary of State's requested numbering system as follows:

12.06 Revocation

- (1) The Department may revoke, suspend or modify an approved variance, by written notice to the proponent if it finds:
 - (a) that the conditions or restrictions of the variance are being violated or are inadequate to avoid significant risk of groundwater contamination or adverse human health effects; or
 - (b) that the applicant has made a false or misleading statement in any information provided pursuant to 333 CMR 12.04.

Current Proposal:

12.07 RECORD KEEPING REQUIREMENTS

1. Any person who uses a pesticide on the GROUNDWATER PROTECTION LIST, except those labelled for and used exclusively in an INDOOR SETTING, shall file annually with the Department, reports and records, consistent with the record-keeping requirements of 333 CMR 10.15, by the first day of January.

Comments:

Testimony regarding the recording keeping requirements was wide ranging from those who contend that enough records are already maintained, to those who contend that only users of these regulated pesticides in Zone II's should be required to submit

records, to those who contend that all pesticide users (of the regulated and non-regulated materials) should be required to submit records. Further, the suggestion is made that the regulations require the Department to compile and analyze the data on a yearly basis.

Discussion:

Currently, the Department requires that use records be maintained by licensed applicators, but they do not have to be submitted to the Department. It is vital, however, that the Department take this opportunity to obtain and review information regarding the application of these potential groundwater contaminants throughout the state. In this way, DFA will be able to more clearly understand groundwater monitoring information.

At this juncture, DFA would not be able to responsibly contend with receiving and reviewing information regarding all pesticides used throughout the state. The Department should consider requiring this data in the future when it is practical to do so.

Recommendation:

It is recommended that the tenor of this section not be changed, but that requirements reflect any other changes made, ie: exemptions other than indoor use and personal and homeowner use.

(Representative comments in this area include Testimony Exhibits G, I, A7, A17

Current Proposal:

12.08 PENALTIES

1. Any person in violation of this section shall be subject to revocation of the VARIANCE or civil or criminal penalties pursuant to M.G.L. c. 132B section 13.

No comments were received on this section.

Current Proposal:

12.09 APPEAL

1. Any applicant aggrieved by a decision of the Department to deny, revoke, suspend or modify, a VARIANCE or aggrieved by the conditions of the VARIANCE, may request an adjudicatory hearing before the Pesticide Board as provided pursuant to M.G.L. c. 132B section 13. The request for a hearing must be made in writing and received by the Department within thirty (30) days of the date of the decision.

2. The decision of the Department shall remain in effect during the appeal period.

Comments:

It was noted that this section only allows the "applicant" to appeal the granting or denial of a variance. The regulation should allow any person to appeal the variance who would otherwise have standing. This would include, any aggrieved party.

Additionally, although no comment was made, there was a technical error in the time allowed for an appeal. M.G.L. c. 132B section 13 states that the maximum time for the appeal must be twenty one (21) days.

Recommendation:

It is recommended that this section be changed to the following:

12.09 Appeal

Any person aggrieved by a decision of the Department to deny, revoke, suspend or modify a Variance, may request an adjudicatory hearing before the Pesticide Board as provided for pursuant to M.G.L. c. 132B section 13. The request for a hearing must be made in writing and received by the Department within twenty one (21) days of the date of the decision.

EFFECTIVE DATES

It is recommended that consideration is made to select an effective date which will not interfere with the current growing season and purchase of this years materials.

Additionally, it would be wise to provide time for landowners to work with SCS and Extension in developing individual IPM programs. Placing these regulations into effect immediately may overburden SCS and Extension, thereby putting certain pesticide users at a great disadvantage. One year of business loss could bankrupt some applicators and farmers. If provided with the time to adapt to the regulatory changes, users would take advantage of the opportunity to find alternatives and develop IPM programs. It is recommended that an effective date of one year following the promulgation of the regulation, be adopted.

Since the development of alternative products or control methods takes many years, delaying implementation for this reason is not practical. Providing time to conform to the regulation, however, is rational.

CONCLUSION

This regulation can reflect a well balanced effort to effectively protect groundwater sources of public drinking water supplies from pesticide leaching contamination, while at the same time acknowledging that not all land areas and application programs present the potential for leaching. Once the regulations are reworked to reflect the necessary changes, the Commonwealth will be one step closer to protecting one of our important natural resources.

I am optimistic that the Department of Food and Agriculture, in conjunction with the other cooperating agencies, will develop a workable implementation scheme and variance process as well as an effective enforcement policy. Through this effort, groundwater supplies will be protected from pesticide contamination and user groups will be encouraged to seek alternative control methods, but will not be unnecessarily regulated.

Again, the Department should be commended for this effort. Although the regulated community provided constructive comments to assist in the final drafting of the regulation, the communities of environmentalists, farmers and pesticide applicators all agreed that the regulation is necessary and desirable. By taking these actions now, future generations will be assured of clean drinking water supplies.

The following information was requested from DFA to better understand the potential impact of the regulation on the user community and to determine the foundations of the criteria selected. The Department's response is attached hereto as Resource Exhibit M.

INFORMATION REQUESTED FROM DFA

1. Assessment of variance cost: specific amounts and places applicant can contact for assistance
2. Amount of time needed to process variance and renewals
3. Scientific support for each definition since these are questioned by several parties
4. Amount of land currently impacted and crops
5. What are possibilities for future funding of IPM program
6. Analysis of monitoring studies on "leachable" land and no traces found.
7. If intended source for assistance for site and alternative analysis is SCS and Extension, how long have they stated it will take them to process a request, what will the cost be.
8. What monitoring program is the department going to conduct.
9. The complete list of pesticides which would make the Groundwater List if the currently proposed regulations are adopted.
How many make the list due to data gaps?
11. Copy of the Cape Cod Study and other studies referred to in the testimony.

This information was requested as the responses impact the recommendations made after analyzing ability of implementation, assistance, cost etc... Not all answers were available.